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PSYCHIATRIC CO-MORBIDITIES IN PATIENTS WITH ATRIAL FIBRILLATION

Psychiatry

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ABSTRACT

Aim And Objectives: The aim of this study was to evaluate psychiatric co-morbidities in atrial fibrillation inpatients of a single tertiary center in Kashmir. **Materials and Methods: Results:** In our study, evaluation of the psychiatric disorders revealed 66.67% prevalence in AF patients. The mean values of anxiety and depressive symptoms according to HADS were 9.23 ± 1.98 and 8.92 ± 2.01 respectively. The mean value of MMSE was 25.39 ± 2.08. **Conclusion:** The consultation-liaison psychiatry for assessing Psychiatric co-morbidities is fundamental for designing an appropriate intervention plan to address mental burdens of patients living with AF.

KEYWORDS

Atrial fibrillation, Psychiatric symptoms, Prevalence

INTRODUCTION

Atrial fibrillation (AF) is the most common sustained arrhythmia, with an increasing incidence. In 2019, nearly 59.7 million people worldwide suffered from this disease, doubling the estimated cases in 1990 [1]. Besides, AF is associated with an increased incidence of embolic stroke (with an average annual risk of 4.4% in patients with AF) [2], heart failure (HF) [3], myocardial infarction [4], dementia [5, 6], and increased mortality [7]. As a result, AF has become one of the most burdened diseases globally due to the large population of AF and its poor prognosis. Therefore, diagnosis and treatment AF is of substantial clinical value. With emergence of increasing medical evidence and the development of new technologies, knowledge of AF and its clinical management are constantly being updated. However, prevention of disease relapse and improvement of prognosis remain challenging for clinical research.

Mental disorders and cardiovascular diseases often coexist with a complex bi-directional relationship [8]. The underlying mechanism of this coupling is multifaceted and has not been fully clarified. Psychosocial factors are deemed to play a substantial role in the expression, course, and magnitude of cardiac illness [9]. Their adverse consequences may be mediated by the lower chance of receiving preventive measures and by the poor adherence to lifestyle interventions and medications [10, 11]. Recently, mental disorders have become a serious concern worldwide. As reported by WHO in 2019, 970 million people worldwide have mental disorders, with anxiety and depression being the two most common categories [12]. Depression and anxiety are common psychological disturbances that contribute to the rising incidences of morbidity and mortality, reducing quality of life, and increasing economic burden [13, 14].

Emerging evidence has shown that patients with acute and chronic cardiovascular diseases are at a higher risk of developing mental disorders [15]. Mental disorders are also on the agenda for patients with AF. Studies have shown that patients with AF have a poorer quality of life than patients with other cardiovascular diseases, regardless of disease symptoms [16], which directly affects their psychological well-being. In another study, several factors affecting health related quality of life in patients with AF included depression and anxiety [17]. In patients with established AF, psychiatric manifestations (including anxiety, depression, and symptom preoccupation) are not uncommon, with a reported prevalence of 25 to 50% across various studies. On the one hand, the deleterious effects caused by arrhythmias are usually not restricted to the AF episode only, as anxiety resulting from panic of developing new events in patients with paroxysmal AF may sometimes become more annoying and restraining than the arrhythmia itself [18]. On the other hand, patients complaining from anxious or depressive symptoms are more prone to an amplified risk of developing various arrhythmias, including AF [19]. As well, growing evidence from recent meta-analytical researches established that AF may be a major predictor of cognitive impairment and increased risk of dementia with or without a history of

stroke. Additionally, the relationship to dementia was found to be evident when AF starts in mid-adulthood period and when its duration is longer [20].

However, the spectrum of psychological distress severity, key predictors of distress, and response over time to AF management remain unknown. In this study, we aimed to analyze the psychiatric comorbidities in patients of AF.

MATERIALS AND METHODS

The study was carried out by the collaboration of Cardiology and Psychiatry Deparments at Govt. Medical College, Srinagar from 2022 to 2023. In this study a total of 30 patients with Atrial fibrillation (AF) were enrolled. The inclusion criteria were: primary diagnosis of AF with clinically stable symptoms and age ≥ 18 years. The patients with acute coronary syndromes, heart failure with reduced EF, thyroid disorders, advanced hepatic/ renal diseases, or malignancies, as well as patients with a history of head trauma, substance abuse, psychotropic medications, dementia, or any psychiatric/neurological diseases affecting the cognitive abilities and patients who refuse to participate were excluded from the study. The study was approved by the board of ethical committee, GMC Srinagar. Informed and written consent was obtained from all participants.

Baseline characteristics (age; gender; height; weight; marital status) and clinical characteristics (type of AP) of participants were independently reviewed and documented. The information of all eligible participants was recorded for results analysis without any missing data. All patients in this study were subjected to the following: Cardiac evaluation was focused mainly on the following:
- Resting 12 lead electrocardiogram for diagnosis of AF.
- Transthoracic echocardiographic examination to assess left ventricular (LV) functions and LAD.
- The European Heart Rhythm Association (EHRA) symptoms severity score was applied to measure the AF-related symptoms. Arrhythmia related symptoms (including palpitations, fatigue, dizziness, dyspnea, and chest pain) are usually evaluated, and the patients attain scores from 1 to 4 with regard to how these symptoms influence their daily activity (ranging from no symptoms to severe symptoms that lead to discontinuation of everyday activities, respectively) [21]. EHRA score ≥ 2 was found to be related to adverse outcomes and more frequent hospitalizations [22].

General examination and routine laboratory workup to exclude patients who had serious metabolic or neurological disorders that might affect cognitive abilities.

Psychiatric evaluation included clinical psychiatric interviewing as well as assessment of psychometric tests as follows:
- The Mini–Mental State Examination (MMSE), which is a widely used brief screening tool, was applied for quantitative evaluation

of cognitive impairment [23]. It consists of 11 simple questions including tests of orientation, registration, attention, recall, and language. The MMSE score is the number of correct items with a maximum total score of 30. A cutoff score of 27 for cognitive impairment was recommended by many researchers [24] as it yields the best sensitivity and specificity in detecting even minor decline in cognitive functions. Accordingly, our participants were classified, based on their cognitive scores, into: no impairment (≥ 27), mild impairment (21–26), moderate impairment (11–20), or severe impairment (≤ 10).

- The Hospital Anxiety and Depression Scale (HADS) in its Arabic version, which offers an applicable and replicable screening tool for the evaluation of anxiety and depressive symptoms in non-psychiatric inpatients units. It is a self-report rating scale of 14 items on a 4-point Likert scale scored 0–3 based on recent symptoms. It contains two subtests: HADS-anxiety subscale (HADS-A) and HADS-depression subscale (HADS-D), each of them includes 7 items. Each of the anxiety and depression subscales are obtained by summing up the scores of the seven items, yielding values between 0 and 21. The HADS have three ranges for each subscale: 0–7 (normal), 8–10 (borderline), and 11–21 (cases) [25].

Statistical Analysis
Data were analyzed using Statistical Program for Social Science (SPSS) version 22.0. Quantitative data were expressed as mean ± standard deviation (SD). Qualitative data were expressed as frequency and percentage. Pearson's correlation coefficient (r) test was used for correlating data. Regression analysis was used to predict the value of a variable based on the value of another variable by linear regression analysis.

RESULTS
The mean age of the patients was 61.6±10.22 (range 32-69) years. In this study maximum patients were >50 years of age 16 (53.33%). There were 19 (63.33%) males and 11 (36.67%) females in this study. The associated co-morbidities were present in 60% patients and most common co-morbidity was hypertension in 11 (36.67%) patients (Table 1).

Table 1: Baseline demographic characteristics of patients (N=30)

Age (Mean ± SD)	61.6	10.22
Age group (Years)		
18-35 (No. /%)	4	13.33
36-50 (No. /%)	10	33.34
>50 (No. /%)	16	53.33
Gender		
Male (No. /%)	19	63.33
Female (No. /%)	11	36.67
Marital status		
Unmarried (No. /%)	2	6.67
Married (No. /%)	28	93.33
Co-morbidities		
Hypertension (No. /%)	9	30
Diabetes mellitus (No. /%)	7	23.33
Hypertension + Diabetes mellitus (No. /%)	2	6.67

The mean values of the evaluated cardiac parameters were 2.57±0.59, 55.41±3.88 %, and 4.04 ±0.51cm for EHRA score, Ejection fraction and Left atrium dimension, respectively (Table 2).

Table 2 The mean values of the evaluated parameters in the study

EHRA score (Mean/SD)	2.57	0.59
Ejection fraction (Mean/SD)%	55.41	3.88
Left atrium dimension (Mean/SD) cm	4.04	0.51
HADS anxiety (Mean/SD)	9.23	1.98
Mild (No. / %)	6	16.67
Moderate (No. / %)	2	6.67
Severe (No. / %)	1	3.34
HADS depression (Mean/SD)	8.92	2.01
Mild (No. / %)	6	20
Moderate (No. / %)	4	13.33
Severe (No. / %)	1	3.34
MMSE (Mean/SD)	25.39	2.08

The mean values of anxiety and depressive symptoms according to HADS were 9.23±1.98 and 8.92±2.01 respectively. The mean value of MMSE was 25.39±2.08 (Table 2). Evaluation of the psychiatric disorders revealed that the level of anxiety symptoms were in 9 (30%) of patients, with 6 (16.67%) showing mild anxiety, 2 (6.67%) showing moderate anxiety, and 1 (3.34%) showing severe anxiety. Evaluation of depression status showed that 11 (36.67%) had depressive symptoms, with 6 (20%) demonstrating mild depression, 4 (13.33%) demonstrating moderate depression, and 1 (3.34%) in the severely depressed category (Table 2).

DISCUSSION
AF is the most widespread arrhythmia in medical practice and one of the leading causes of hospitalization. Notably, clinical risk factors among AF populations are currently receiving more attention among them HTN, diabetes, and alcohol abuse [26]. Nerveless, the co-morbid psychiatric symptoms are also crucial and should receive the same attention in view of the fact that the Current European Society of Cardiology guidelines have recently delineated psychiatric distress and depressed mood as known consequences of AF [27]. In this study 30 inpatients with AF were investigated for the prevalence of co-morbid psychiatric symptoms.

In our study, evaluation of the psychiatric disorders revealed 66.67% prevalence in AF patients. In this study, the level of anxiety symptoms were in 9 (30%) of patients, with 6 (16.67%) showing mild anxiety, 2 (6.67%) showing moderate anxiety, and 1 (3.34%) showing severe anxiety. Evaluation of depression status showed that 11 (36.67%) had depressive symptoms, with 6 (20%) demonstrating mild depression, 4 (13.33%) demonstrating moderate depression, and 1 (3.34%) in the severely depressed category. These findings were in line with earlier studies [28-30] that reported equivalent rates of anxiety (34.9–38%) and depression (16.9–39.4%) among their AF series. Accumulating evidence pointed to the potential role of AF in triggering psychiatric diseases caused by patient awareness of their prospective illness, and high worry and nervousness [31]. On the other direction, patients complaining from anxious and depressive symptoms are more prone to increased risks of initiation and/or recurrence of various arrhythmias, including AF [19]. Several mechanisms have been proposed to explain this possible bidirectional coupling, including elevated inflammatory markers, triggered autonomic nervous system with consequent catecholamine overload, dys-regulated hypothalamic–pituitary–adrenal axis, and activated renin– angiotensin– aldosterone system [19]. These alterations could trigger recurrent episodes of AF, either directly by disturbing the electro-physiologic characteristics of the atria, or indirectly by promoting atrial fibrosis and stress-cardiomyopathy through microvascular endothelial damage and catecholamine cardiotoxic effects [32].

The current research revealed no significant correlations between different cardiac variables (EHRA, EF, LAD) and both HADS scores. In the same line, Pavlicek et al. [33] noted that EHRA did not link significantly to the mean values of anxiety and depression scores. On the contrary, Watkins et al. [34] concluded that HADS-A subscale was associated with left ventricular EF. Also, Wang et al. [35] found that anxiety had significant association with LAD and suggested that AF-caused anxiety is arbitrated by poor quality of life as AF patients are usually marked by discomfortable symptoms, limited daily activities, complicated treatment, and probable upsetting complications. The discrepancy between various studies may be due to different sample size, selection criteria, and/or age categories. In the present study, LAD was negatively correlated with cognitive functions (MMSE), which was consistent with both earlier and recent studies [36, 37], as higher LAD measurements were significantly correlated with lower MMSE scores. This was additionally confirmed by the linear regression analysis in our study, which identified LAD and age as the two prominent predictors impacting cognitive functions. Consequently, early cognitive assessment is strongly recommended for all AF patients with moderate-severe enlarged left atrium (with LAD > 4.6 cm) chiefly among old-aged adults as they are most likely to have worsen MMSE scores. In partial agreement to the current findings, Alonso et al. [38] revealed a significant correlation between age and cognitive functions in AF patients.

Limitations
In this study, there are some limitations such as small number of study population. The study could be more valuable if we could do follow-up of the cases to evaluate the long-term effect on psychiatric symptoms and vice versa. This could be regarded in future longitudinal studies on

a larger sample size to confirm our findings.

CONCLUSION

Considerable number of our AF patients had psychiatric symptoms and mild cognitive impairment that should not be ignored to avoid the possible detrimental complications. So, the "consultation-liaison psychiatry" for assessing Psychiatric co-morbidities is fundamental for designing an appropriate intervention plan to address mental burdens of patients living with AF.

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